

**ABSTRACT**

The invention provides gallium nitride material devices, structures and methods of forming the same. The devices include a gallium nitride material formed over a substrate, such as silicon. Exemplary devices include light emitting devices (e.g.,  
5 LED's, lasers), light detecting devices (such as detectors and sensors), power rectifier diodes and FETs (e.g., HFETs), amongst others.